

8. Evaluate each power of 10.

- a) 10^7 b) 10^2 c) 10^0
 d) 10^{10} e) 10^1 f) 10^6

9. Use powers of 10 to write each number.

- a) 6 000 000 000 b) 200 c) 51 415
 d) 60 702 008 e) 302 411 f) 2 000 008

10. Write each number in standard form.

- a) 7×10^7
 b) $(3 \times 10^4) + (9 \times 10^3) + (5 \times 10^1) + (7 \times 10^0)$
 c) $(8 \times 10^8) + (5 \times 10^5) + (2 \times 10^2)$
 d) $(9 \times 10^{10}) + (8 \times 10^9) + (1 \times 10^0)$
 e) 1×10^{15}
 f) $(4 \times 10^3) + (1 \times 10^0) + (9 \times 10^5) + (3 \times 10^1)$

11. The data below refer to trees in Vancouver.

Use powers of 10 to write each number.

- Street trees have an estimated value of over \$500 million.
- In the past decade, the Park Board has planted almost 40 000 new street trees.
- Nearly 3 million ladybugs are released every year to help control aphids on street trees.
- The most common street tree is the Japanese flowering cherry, with over 17 000 growing on city streets.
- There are 130 000 trees lining the streets of Vancouver.
- There are nearly 600 different types of trees.

12. **Assessment Focus** Choose a negative integer as the base of a power. Copy and complete the table below. Use patterns to explain why the power with exponent 0 is equal to 1.

Exponent	Power	Standard Form
5		
4		
3		
2		
1		
0		

13. In each pair, which number is greater?

How do you know?

- a) $(4 \times 10^3) + (6 \times 10^2) + (6 \times 10^1) + (7 \times 10^0)$ or 4327
 b) $(2 \times 10^4) + (4 \times 10^3) + (2 \times 10^2) + (4 \times 10^1)$ or 2432
 c) $(7 \times 10^7) + (7 \times 10^3)$ or 777 777

14.



- Worldwide, about one billion people lack access to safe drinking water.
- Glacier ice over 100 000 years old can be found at the base of many Canadian Arctic ice caps.
- Approximately 1000 kg of water is required to grow 1 kg of potatoes.

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- Henderson Lake, British Columbia, has the greatest average annual precipitation in Canada of 6655 mm. That is more than 100 times as much as Eureka, in Nunavut, which has the least average annual precipitation of 64 mm.
- In November 2007, at the request of local First Nations, over 10 million hectares of the Mackenzie River Basin were protected from industrial development.

Using this information:

- a) Identify the powers of 10 and write them using exponents.
 - b) Arrange the numbers in order from least to greatest.
 - c) Explain how writing powers of 10 using exponents can help you to order and compare numbers.
15. What are the meanings of the words trillion, quadrillion, and quintillion?
Write these numbers as powers.
What strategies did you use?

Math Link**Your World**

The amount of data that an MP3 player can store is measured in gigabytes. For example, one MP3 player can store 2 GB (gigabytes) of songs. One song uses about 7000 KB (kilobytes) of space, where $1 \text{ GB} = 2^{20} \text{ KB}$. About how many songs can the MP3 player hold?

